

RHEEM CALIFONE



the most reliable, scientifically engineered.....

LANGUAGE LABORATORY

- modern electronic instruction centers designed for maximum teacher/student productivity
- adaptable components for all language laboratory teaching methods



califone CORPORATION • LOS ANGELES 16, CALIFORNIA

A SUBSIDIARY OF RHEEM MANUFACTURING COMPANY



FOREWORD *by A. Lightfoot Walker, President Rheem Manufacturing Company*

Thousands of students and hundreds of teachers, making consistent and daily progress in modern language education have proved that the language laboratory method for the teaching of languages has come of age. No longer is the common question, "Should we buy a Language Laboratory?"; instead, educators are asking, "What type of Language Laboratory will best fulfill our requirements?" It is most heartening to us to know that the versatility and quality of Rheem Califone Language Laboratories have resulted in their installation in hundreds of educational institutions throughout the United States.

Rheem Manufacturing Company's vast resources, manufacturing plants and world-wide organization provide the greatest possible security for your Language Laboratory investment. The combination of our research and development facilities and the utilization of our factories to produce specialized components assure you of years-ahead design and outstanding value.

We also consider the making and supplying of Language Laboratories for the schools of our country a service in the public interest; and through the combined efforts of Rheem Manufacturing Company, Rheem Califone Corporation and our family of devoted Rheem Califone dealers, we are determined to perform this service through quality manufacture, and continuing research and development.

LIVE A LANGUAGE... LEARN A LANGUAGE

Rheem Califone Language Laboratories insure faster learning because:

THE TEACHER.....

- Directs transmission of up to 10 selected Master Lessons (discs or tape) — OR — direct instruction or comment — to any student, group of students, or to the entire class.
- Can divide class into distinct ability or language groups — directing specialized drill or advanced material to corresponding sections.
- Directs single student or GROUP PARTICIPATION in oral-aural (audio-active) experience.
- Records one or two students simultaneously on the dual track console recorder for future comparison or analysis.
- Monitors student *without* student awareness.
- Individually corrects or instructs any student.
- Broadcasts any student to any group or to the entire class, under teacher control.
- Broadcasts a conversation between any two students to the entire class, under teacher control.
- Can tour the class, plugging into any student's booth to give personal instruction.
- Can record master lessons at the console.
- Can duplicate master lessons at student booth equipped with Duplex Recorder (and special amplifier).

THE STUDENT.....

- Listens to "Master Lesson" (from a teacher-selected tape or phonograph record) through headphones, instantaneously hearing his own response spoken into the microphone.
- Records on tape recorder — either in own booth or at Master Console. Hears playback of his own and Master voice.
- Works individually at own learning pace with master tapes on his own individual Rheem Califone Duplex Recorder, when booth is so provided.
- Intercommunicates with Teacher.
- Speaks to other students — individuals, groups or entire class — at Teacher's discretion.

Although all reference to the function of the laboratory above are slanted toward the learning of a language, this same laboratory offers a vast potential in other instructional departments — English, Science, Music, Adult Education, Business, etc. for use in dramatic or poetry readings, speech therapy, public speaking, voice training, shorthand testing, and literary appreciation....



LEADERSHIP... NOT COMPETITION IS THE RHEEM CALIFONE POLICY

For over 20 years, Rheem Califone's Leadership in School and Professional Audio Equipment has set the Standard of Quality in Portable Phonographs, Transcription Players and complete Sound Systems.

QUALITY • Rheem Califone maintains complete Quality Control over all Rheem Califone Language Laboratory parts. Recording, playback and amplification components are designed and built in our plants. Each bears the identifying Rheem Califone seal — your symbol of topmost quality.

COMPATIBILITY • Components are matched so that units may easily be added without discarding previously installed equipment.

DURABILITY • *All components are guaranteed for one year.* Cabinets and booths are of proved sturdy design. Only long-life heavy-duty synchronous motors are used in Rheem Califone tape recorders.

SERVICEABILITY • All electronic equipment is provided with plug-in connectors permitting quick removal for servicing and easy reinstallation. Convenient check points enable testing every circuit of entire system without removing tubes or equipment from enclosures. A single wire at low impedance carries teacher-student communication, console masters and student recording at the console. Service problems are reduced. Complicated multiple wiring installation is eliminated.

OPERATIONAL SIMPLICITY • Controls on tape recorders, phonographs and teacher consoles are reduced to a minimum eliminating possible "Gadget Confusion" and student tampering.

HIGH FIDELITY • Rheem Califone equipment provides the highest standard of sound reproduction — especially essential in languages where intonation and inflection determine the exact meaning of words.

THE RHEEM CALIFONE PRICE includes Rheem Califone Service. All installation and service of Rheem Califone Language Laboratory Equipment is performed by franchised RHEEM CALIFONE DEALERS — selected and trained for experience and competence in installing and servicing this type of equipment.

CALL UPON YOUR RHEEM CALIFONE DEALER

He is an expert. He is interested in **YOUR** problem. He is **AVAILABLE** to help in **PLANNING, INSTALLATION** and **SERVICE**.



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FOREWORD..... *by A. Lightfoot Walker, President Rheem Manufacturing Company*

In the two years since the National Defense Education Act became law, there has been more progress in electronic aids for modern language study than in the ten previous years.

Within the past year, this progress has been accelerated, and along with it has come a general acceptance of the fact that the Language Laboratory method of teaching has come of age. No longer is the common question, "Should we buy a Language Laboratory?"; instead, educators are asking, "What type of Language Laboratory will best fulfill our requirements?" It is most heartening to us to know that in hundreds of cases the answer to this question has resulted in the installation of Rheem Califone Language Laboratories. Thousands of students and hundreds of teachers, making consistent and daily progress in modern language education, have proven the versatility and quality which we have made a part of every Rheem Califone Language Laboratory.

Rheem Manufacturing Company's vast resources, manufacturing plants and world-wide organization provide the greatest possible security for your Language Laboratory investment. The combination of our research and development facilities and the utilization of our factories to produce specialized components assure you of years-ahead design and outstanding value.

We consider the supplying and servicing of Language Laboratories for the schools of our country an obligation in the public interest; and through the combined efforts of Rheem Manufacturing Company, Rheem Califone Corporation and our family of devoted Rheem Califone dealers, we are pledged to carry out this obligation through quality manufacture, continuing development and prompt and efficient service.

"IT ISN'T A LANGUAGE UNLESS YOU SPEAK IT"

by . . . Dr. Gustav Mathieu, Chairman, Dept. of Foreign Languages
Orange County State College, Fullerton, California

"The single paramount fact about language learning is that it concerns, not problem solving, but the formation and performance of habits."

Prof. Nelson Brooks, Yale University, in
Language and Language Learning, Harcourt,
Brace, 1960.

From Coast to Coast foreign language teachers are rallying to the new fighting slogans of their profession: "It isn't a language unless you speak it," and "Give us the tools and we will do the job!"

Their first battle cry may set forth a new goal but the method of learning a language by hearing and speaking it is as old as mankind. Mr. Berlitz made millions at it, cashing in, incidentally, where our schools had failed.

Why then, you will ask, haven't we used this method before? This question is best answered by a counter-question: Do we really need language labs to produce the "literally millions" of Americans who can speak Spanish—or any other second language, for that matter—wished for by the President of the United States in a nation-wide TV address upon his return from South America? Of course we don't! There are better ways of learning a second language. Let's send every American youth for a year to the country whose language he wants to speak. Or let's engage for every youth a trained, private tutor who will spend two hours with him a day for several years.

We, the taxpayers, know that these solutions are pipe dreams. But we also know that a people which spends millions on advertising chewing gum can afford to equip every school with a language lab, whose cost, incidentally, is minimal in terms of student unit-hour spent in language practice. And we also know that the language lab is to date the most effective tool for teaching to understand and speak a foreign language to *large groups*. Here are twelve reasons why language labs are *the* key to language learning in the *new* key:

Language is a skill, and as with all skills, it is practice that makes perfect. A skill mastered to perfection becomes a habit, and habits, according to Webster's, are "acquired by repetition." In a language lab *all* the learners can repeat and speak at the same time—*all* the time. In the lab Johnny is a fulltime student. He does not have to wait his turn to be called on to recite. In a single lab period Johnny can say *Soy norteamericano* more often than he would in six weeks in a classroom of thirty.

If a language is learned by hearing and imitating those who speak fluently, it follows that every time the learner hears a mistake he learns a mistake. At one blow the lab eliminates this harmful classroom feature. In the lab Johnny no longer hears the imperfect pronunciation and garbled versions of his classmates.

Boon to Teacher

Once the teacher is "on tape" the machine takes over the mechanical chore of drilling the learners with different patterns again and again and again. And it does so without time-consuming hesitation and without betraying the fatigue and irritation felt by the teacher after going the same round a hundred times a period, five periods a day. The lab frees the teacher for creative teaching.

Every learner has a private tutor, and an inexhaustible one at that. The teacher on tape is ready to work with the learner whenever he wants to and for as long as he wants to. Just as Johnny goes to the library to study on his own, so he now goes to the "tapery" in the lab, picks the lesson he wants to master and practices to his heart's content.

Fast learners are no longer held back by slow learners. If Johnny is gifted or eager (he, too, wants to go to Germany as an exchange high school student with the American Field Service) he may progress at his own rate of learning. While the rest of the class is still working with taped lesson five, he is practicing with the "Enrichment Tape to Lesson Five" or perhaps with taped lesson six.

Slow learners get a better break too. The teacher can now help the slow learner without fear of interrupting the entire class. While 29 students keep on practicing with the taped lesson, the teacher devotes remedial attention to Mary. Here she is, talking to Mary over the intercom system from the master console: "Mary, pronounce again, 'ich sehe das Bild,' not 'baid'."

Psychological Benefits

Isolated acoustically and visually in his private booth, the learner soon loses his self-consciousness and fear of ridicule so detrimental to language learning. The mike into which he speaks will not giggle at him as might his classmates. Freed from the fear of embarrassment, Johnny courageously tackles those new and strange sounds, and soon begins to derive pleasure from articulating the foreign language.

In order to pronounce correctly, the learner must first hear accurately. In the lab, the earphones bring the sounds which Johnny is to imitate right to his inner ear. And they provide the learners with that most precious ingredient for language practice: freedom from the sounds of a truck rumbling down the street, a jet screech-

ing in the skies, and a lawn mower putt-putting cacophonously right beneath the classroom window. Add to this that concentration is improved as visual distractions—that cute pony tail of Jane in a row ahead—are minimized.

Motivation is increased because the learner obtains immediate results of his efforts. Properly programmed, the lab is more than an automatic drillmaster for parrot-like *Mimicry-Memorization* or passive *Listening-Comprehension* exercises. It is a self-teaching device which challenges the learner because the exercises are a continual test. However, this test is not designed to test but to teach: immediately after giving his response, Johnny hears the correct response (which he repeats), as illustrated in this diagram of a segment from a *Creative Exercise* in the pattern of plurals:

□□ Master	□□□□ Student	□□□□ Master	□□□□ Student	□□
I SEE A CHILD	I see two childs	I SEE TWO CHILDREN	I see two children	

CAPITAL letters indicate what the teacher has recorded and what the learner hears. Small letters show what the learner says in the pause that the teacher has left for him on the tape. In this exercise the learner gives a wrong response (childs) to the instruction, "Say that you see two of the items you will hear."

The best way of *avoiding* errors is to imitate the correct model often enough; the best way of *overcoming* errors is to eliminate the waiting period between error and correction. In the lab the learner no longer "takes his mistakes home" while the teacher corrects the papers.

Learner becomes own Critic

Our colleagues in football have long known the value of filming their players and letting them watch themselves later for self-analysis. In today's language lab Johnny can likewise record his voice and play it back for self-evaluation. As the language learner listens to himself, he compares his pronunciation and speech habits with those of the immediately preceding model he has imitated. He can now evaluate his performance because he hears himself *objectively*; that is, he hears himself as others hear him and not with his inner voice distorted by bone conduction. As he listens to himself, Johnny concentrates all his attention on identifying where he sounds differently from his teacher, and this is the first step to self-correction.

The late Heywood Broun once complained: "I've studied Beginners' French, and when I got to Paris I found that nobody there spoke Beginners' French." If Heywood had had the chance to listen to a Parisian cabby he would have fared better. Today's language apprentices in the lab can hear the voices of men, women, children. Their ears become attuned to many intonations and accents.

Learner becomes Earwitness to World

Motivation is increased because the lab makes language learning an exciting adventure in the life and culture of other peoples. In the lab Johnny can "earwitness" the life of a French family from *bonjour* to *bonne nuit* enhanced by the authentic sounds of a French telephone, doorbell, coffee grinder or the *boo-aah, boo-aah* of a French fire engine. (Yes—sirens are strictly American). He can hear the weather report from Radio Madrid or follow the report of the soccer match Berlin-Hamburg (Berlin won 3-4). The tape breaks through the sound barrier of the classroom. It brings life to languages because it brings languages to life—just as they are spoken five or more jet-hours away.

Tool only as good as Teacher

Foreign language teachers know that the machine is only as good as the program that the teacher puts into it. By itself electronic equipment, however elaborate, will never do the job. But the advent of language labs has revitalized their professional mission. They know it opens unlimited possibilities of offering quality despite quantity instruction. And they are confident that once they are given the tools and have learned how to fuse the art of labmanship and the art of classroom teaching into *one* craft with specifically designed instructional materials, they will produce a generation of Americans who will make mockery of the humorous, yet sad, way by which Thomas Hood characterized his generation:

Never go to France
Unless you know the lingo,
If you do, like me,
You will repent, by jingo!
Staring like a fool,
And silent as a mummy,
There I stood alone,
A nation with a dummy.

THE ROLE OF THE TEACHER IN THE LANGUAGE LABORATORY

by . . . Dr. Edward M. Stack
Professor and Chairman, Department of Modern Languages
Villanova University, Villanova, Pennsylvania

The advent of efficient language-teaching machinery in the form of language laboratory installations provides a much needed complement to classroom instruction. This new teaching tool makes language instruction far more effective if properly used, but in no way does it reduce the work of the teacher. Just as a typewriter provides a means of producing legible writing quickly *only* if the operator goes to considerable effort to learn

an additional skill—the touch system—the language laboratory will be effective in the teaching scheme only to the extent that the teachers learn the proper use of this valuable aid. The skills they must acquire are mechanical—the manipulation of the equipment (a simple matter)—and technical—the devising of drills, tests, and exercises for the laboratory, and the correlation of this material with classroom instruction.

Fortunately the latest language laboratory equipment is of increasingly excellent construction, and the teacher will not experience much more difficulty in learning to operate it than he would in learning to tune a new television set or drive a new car. The main problem facing the language teacher who has a laboratory is within the realm of his present competence—the construction of structural drills which will be effective as instructional devices in the laboratory. Eventually every textbook will be provided with appropriate pattern drills by the publisher, spoken by native speakers and ready for use. Until that time we are in a period of transition, using many textbooks whose printed exercises are not patterned, and which contain typographical devices for eliciting responses from the student, devices which cannot be used on a laboratory tape.

Specifically, the role of the teacher with regard to the language laboratory has three parts: (1) *pre-laboratory work*, (2) *laboratory supervision*, and (3) *post-laboratory classroom exercises*. Since the teacher's work is increased (as well as being rendered more effective) by the language laboratory, administrators should readjust work loads to compensate for this.

Pre-laboratory work consists of what the teacher does to prepare drills, and what the teacher does in class to prepare the students for their next laboratory period. The drill preparation (often done by committees of teachers who give the same course) is the most serious problem. The drills must be carefully correlated with the classroom work and the textbook or syllabus; they must be structurally patterned, short, and self-correcting*; they must call for a specific response from the student, and require progressive development of the student's ability to compose his own thoughts in the "target language" with native speed, accent, intonation, and conversational style. Such work of drill construction calls for specific techniques—some new, and some adapted from traditional methods.

When drills have been devised, based on the cumulative vocabulary and grammatical content for a given lesson, the script must be prepared in a standard way, and recorded on the master tape by competent speakers. The completion of the master for a given lesson signals the end of the teacher's general preparation for a laboratory period. Now the *pre-laboratory orientation* of the class takes place. During the last few minutes of the class period just preceding a laboratory session the teacher introduces the class to the grammatical principle and drill type to be presented in the laboratory. The grammar is presented inductively with a few examples; then some sample portions of the tapescript are read, and the teacher observes and corrects the student responses. In this way the teacher is assured that the students will know what is expected of them when they arrive in the laboratory, and lengthy explanations and instructions on tape are avoided.

Actual *laboratory supervision* is easy and fruitful, since the hard work of drill construction is past. (When the course is repeated the next year, the existence of the master obviates a repetition of that work, too.) What takes place in the laboratory is simple administrative surveillance on the one hand, and *monitoring* on the other. In an ordinary classroom situation the teacher

monitors one student at a time, while the rest fidget, worry, whisper, and waste time. In the laboratory the teacher is not deprived of this monitoring function; he still listens to and evaluates one student at a time from the console, but the rest of the students are all actively working. The fact that the teacher may be listening at any time may serve as incentive for all students to be expending their best efforts throughout the laboratory session. When a teacher encounters a student who lacks self-critical ability or who repeatedly errs, the teacher can devote time to individual remedial work without interrupting the rest of the class.

The laboratory can be used for teaching reading through repetition drills, writing through dictation drills, and for administering aural comprehension and oral examinations. The role of the teacher with respect to these is primarily one of preparing the master tapes based on his tapescripts.

Post-laboratory classroom exercises are "flexibility drills" used at the next classroom meeting after a laboratory session. The laboratory drills were necessarily rather mechanical patterns—a fact that does not prevent their being extremely effective in teaching comprehension and oral facility. The first few minutes of the subsequent classroom meeting are used by the teacher to put to active use the material most recently used in the laboratory. This is done by providing conversational situations, games, and cultural drills that will enable the students to express themselves using the new material as well as the cumulative back material. The teacher creates a small extraterritorial segment of the foreign land, and the students are the "natives." Since these natives have been shielded from observation and ridicule during their stumbling first efforts (by virtue of the privacy afforded in the laboratory and the infinitely patient teacher on the tape), they have gained sufficient confidence to speak out without embarrassment. They have already compared their own speech with the master on the tape, and know that they can sound precisely like the model. These *post-laboratory exercises* serve as a review, and they place the language in a more realistic context.

The teacher's role in the language laboratory is one in which he can take great pride, because his efforts will be rewarded much more fully than was possible before. The students now come in fuller and longer contact with the foreign language, have the opportunity to hear numerous native speakers as well as their own teacher, and gain a competence and confidence that is delightful to behold. They arrive in the classroom prepared, and the way is cleared for interesting and varied classroom work; the time-consuming systematic routine drills are handled more effectively and efficiently in the laboratory.

The teacher will initially have the task of drill construction and recording, and will become accustomed to the inclusion of *pre-laboratory* and *post-laboratory* phases in the classroom lesson plan. Once the laboratory equipment becomes as familiar in operation as one's automobile, and once the drills for a course have been completed, the initial effort will have been made and the laboratory routine will seem as natural as did the old class routine—with linguistic results far more gratifying.

*The *anticipation drill*, or four-phase drill, is used. See Edward M. Stack. *The Language Laboratory and Modern Language Teaching*. New York: Oxford University Press, 1960, pp. 36-7.



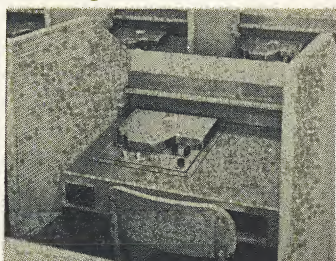
califone LANGUAGE LABORATORIES ALLOW FOUR APPROACHES TO STUDENT LEARNING

1. Audio-Passive (Listening)



Termed the simplest approach to language teaching, Rheem Califone Language Laboratory equipment can be utilized for this particular technique. The student hears, through earphones, the master voice and may or may not follow this oral experience with a textbook. There are pauses in the tape which could allow the student to repeat in his mind that which he has just heard. The equipment needed for this experience is extremely minimal, and yet using standard components in the Rheem Califone Language Laboratory line, those components purchased for this teaching technique may later be utilized 100% should later thinking be towards a more elaborate type of Language Laboratory.

3. Audio-Active-Comparative (Listening-Responding-Recording) Rheem Califone Simplex Recorder



The Rheem Califone Simplex Recorder, when installed in the student booth, provides the easiest-to-operate and most foolproof means of tape recording. It combines the simplicity of the disc with the perfect tone quality and long recording time of the tape. The student listens through his headphones to a master tape recording from the master console, responds into his microphone, hearing himself instantaneously. He records the "master's" voice and his own voice AT HIS OWN BOOTH on the Rheem Califone Simplex Recorder. He may then play back the recording he has just made, and compare his speaking with the voice of the "master." *The tape deck of the Rheem Califone Simplex Recorder is fully enclosed, preventing tampering. The tape cannot be removed by the student.* Only two controls are visible to the student: play-record lever and rewind lever. The Simplex has a unique transistorized signaling device which warns the student when the end of the tape approaches. The mechanism stops if the tape reaches its end. No re-threading of tape or tape handling of any kind is required.

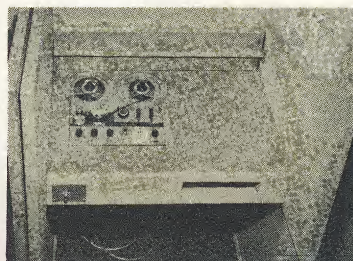
2. Audio-Active (Listening-Responding)

Rheem Califone Vocale System



Student, through his headphones, hears master tape or disc recording from Master Console. When he responds into his microphone, he hears himself instantaneously through earphones. Both the student's and the "master's" voice may be recorded at the console. With the Rheem Califone VOCALE, no tubes or transistors are needed at the student stations. A separate amplification channel is provided for each student at the console. No power supply or power wiring is required at the booth.

4. Library, or Individual Study (Listening-Responding-Recording) Rheem Califone Duplex Recorder



The Rheem Califone Duplex Recorder, when installed in the student booth, allows the student to use a master tape on his individual recorder. He is the *only* one working with *this* master. The student listens to this master tape from the Rheem Califone Duplex Recorder through his earphones. He responds into his microphone, hearing himself instantaneously. Both the student's and the "master's" voice are recorded on the Duplex Recorder. He may then play back the recording he has just made, and compare his speaking with the voice of the "master." The Duplex Recorder makes it possible for the student to work *individually* at his own booth in a review, drill or advanced lesson. The student may also listen and respond to a master tape or recording from the console in the same manner as with the Simplex. The student cannot erase the master lesson, for the Duplex plays only the upper track but records and plays back on the lower track. The master tapes are removable and are not concealed on the Duplex.

With additional accessories, the Duplex can produce a teacher controlled master recording on the upper track. Once recorded, the student can then work independently without danger of erasure of the master.

All four (4) types of equipment may be installed in Rheem Califone LANGUAGE LABORATORY BOOTHS. The most versatile is the Rheem Califone Duplex Recorder which may be used for either group or individual study.

For group study, the Simplex Recorder is best and easiest to use.

The VOCALE, or audio-active, unit can be expanded later into an audio-active-comparative, or an individual study booth merely by adding a Simplex Recorder or Duplex Recorder, respectively, **WITHOUT DISCARDING** the installed equipment for the VOCALE system. No additional wiring to the console would be required in order to thus expand for greater versatility of the laboratory.

The LISTENING STATION is the minimum laboratory unit. It does not require a booth, and can be installed as part of the laboratory or as part of a regular classroom.

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- Can divide class into distinct ability or language groups—directing specialized drill or advanced material to corresponding sections.
- Directs single student or **GROUP PARTICIPATION** in oral-aural (audio-active) experience.
- Records one or two students simultaneously on the dual track console recorder for future comparison or analysis.
- Monitors student *without* student awareness.
- Individually corrects or instructs any student.
- Broadcasts any student to any group or to the entire class, under teacher control.
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- Intercommunicates with Teacher.
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WHY SYNCHRONOUS MOTORS...

In considering the best possible type of motor for Language Laboratory use, we recognized the difference in hard usage given Language Laboratory tape equipment as opposed to the ordinary classroom use of tape recorders.

In the Language Laboratory, many hours of operation are required every day, and the greatest effort is put forth by the capstan motor which must convey the tape smoothly and uniformly hour after hour. *Rheem Califone is the only Language Laboratory manufacturer that offers synchronous motors in their tape drive mechanism as standard equipment.*

The induction motors used on most tape recorders change their speed as the load increases. (See Graph Fig. 1). A motor which is running more slowly than the speed at which the tape was recorded is not going to reproduce the voice with the same tempo, tone or inflection as when it was recorded. Such change in speed is as detrimental to the effectiveness of a Language Laboratory as poor frequency response or distortion. In recorders using induction motors under hard usage, bearing friction steadily increases with use due to the drying up of the lubricants. This increase in bearing load causes the motor to slow down in direct proportion to the load. The only way an induction motor can maintain reasonably consistent speed is by frequent and costly motor service. (See Graph Fig. 4).

The one type of motor which is not subject to this deterioration is the synchronous motor. The rotation of the synchronous motor is locked in with the perfectly timed pulsations of the line current, exactly the same as an electric clock. Regardless of bearing load, the synchronous motor will continue to run hour after hour exactly at its correct speed. By their very nature, synchronous motors run much cooler than induction motors. (See Graph Fig. 2.) They also consume only half of the power of induction motors. (See Graph Fig. 3.)

Our Rheem Califone synchronous motors have 24 coils placed in 12 slots around the periphery of the motor. Four groups of these coils take the pulses of the line current as they are applied 7200 times per minute in the proper sequences to provide exact rotation of the rotor 1800 times per minute. This is, of course, a much more costly motor design than the simple 4 coil induction motor, but it pays off many times over in providing optimum performance for years of hard usage.

RHEEM CALIFONE EXCLUSIVE COMMUNICATION FEATURES

An unseen but very effective part of a Rheem Califone Language Laboratory is its exclusive, patented, low impedance communication system. This unusual feature has been termed, the "Y line." It provides the following important communication features:

1. All communication between the student and teacher, between the teacher and various groups of students, and between one student and another take place over the "Y line" at low impedance, in keeping with best radio and TV broadcasting practice, eliminating the possibility of hum pickup or cross talk.

2. It provides for the distribution of masters to individual students at constant level over the same wires as the communication mentioned above and without the necessity of power amplifiers, thereby greatly extending the life of switches and reducing the number of distribution wires, both contributing to lower maintenance costs.

3. It provides for recording any student at the master console again over the same set of communication wires. It also permits the teacher's voice to be recorded on any student's recorder.

4. It provides Rheem Califone's exclusive triple-purpose all-call system, a new and most important feature in getting maximum use from your Language Laboratory. First, there is the usual all-call to the entire class. Second, there is all-call by rows of students in conjunction with the simplified row type of master switching. In addition, it provides all-call to any group of students listening to the same master program, regardless of where they are located in the classroom. In those Labs having individual master switching, this special feature permits the teacher to speak to any number of students anywhere in the room by turning a single switch. Since the most frequent necessity for group calling is to those students who are working on a common exercise (in the Laboratory situation it is a common master) the teacher can stop the particular master and instantly communicate with all of the students listening to that master to discuss either the past exercise or a forthcoming new exercise without disturbing other students in the class working with other master programs. This group all-call feature is an exclusive with Rheem Califone.

Experience in operating procedures in many hundreds of language laboratories has indicated that in most cases no more than two or three masters are in use at a given time. When a large number of students are going to be listening to the same master, the switching of an entire row of students onto a particular master is the easiest procedure. It was for this reason that Rheem Califone introduced the row method of switching; however, there are still many cases where individual switching may be required and the new Rheem Califone individual switching panels provide the best features of both types of switching. In the same Laboratory, therefore, it is possible now to have switching of masters to rows of students, and yet switch any student's master program individually whenever it becomes necessary. This remarkable versatility in the Rheem Califone Language Laboratory is accomplished with the minimum of circuitry and the minimum of switch contact wear due to Rheem Califone's exclusive "Y line".

These Rheem Califone communication features should be included as a basis for comparison in your consideration of language laboratories.

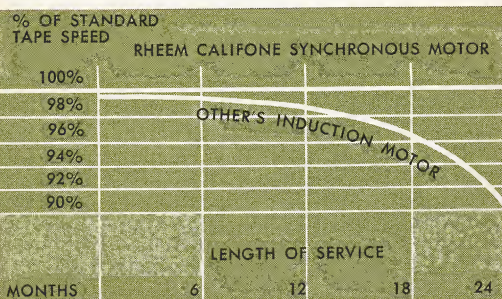


Fig. 1 Constant Speed of Synchronous Motors

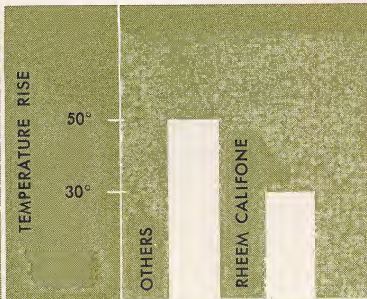


Fig. 2 Cooler Operation

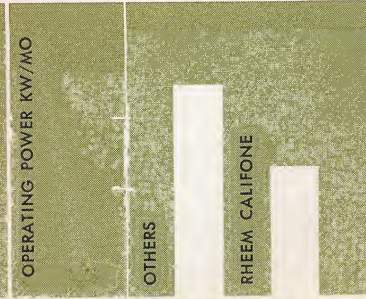


Fig. 3 Low Operating Power Consumption

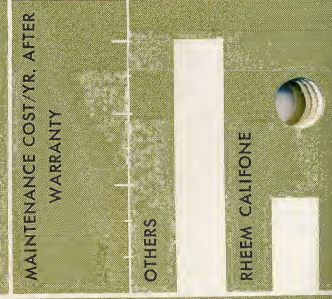


Fig. 4 Lower Maintenance Costs

SUGGESTED BID SPECIFICATIONS FOR RHEEM CALIFONE LANGUAGE LABORATORY EQUIPMENT

The following paragraphs present a suggested statement of school board policy with a general description of the laboratory's proposed function. This is followed by an all-inclusive descriptive bid format.

The master console and four different booth functions are described. You may decide on one or more of the booth functions for your Laboratory. Delete the sections not applicable to your needs. You may obtain this type of Laboratory in any number of student positions as may be required. Quantities in parentheses () may be changed or the item omitted, as desired.

It is the intent of this School Board to purchase equipment manufactured by a firm well established and experienced in the school sound equipment manufacturing field and that the equipment so furnished shall be installed either directly by that manufacturer or by his local agent, who shall be factory trained and shall also be experienced in dealing with public institutions.

It is further the intent of this School Board to obtain materials that are designed for the rough usage afforded equipment of this type when placed for student use. Devices originally designed for home use are not acceptable under the conditions of this bid.

The Board will demand such high quality features as professional low impedance circuitry; telephone-type switches having silver contacts; shielded cables between the student booths and the console; set-screw fastened knobs; cathode test points; dual-parallel rectifiers in the distribution amplifiers; wired, rather than printed circuit amplifiers; synchronous motors; plug-in construction; positive action tape mechanisms which will not spill or break tape; headphone and microphone elements other than crystal or ceramic; workmanlike installation and service, and the installation shall be properly grounded for safety.

Furthermore, the entire system shall be of a modular plug-in concept so that it may be expanded, otherwise altered or moved without obsoleting or destroying any of the initial installation. All electrical and mechanical components must be compatible with each other, designed for integrated use. Characteristics of one component must render it usable with any other component in the system.

Outlets shall be provided at each student booth which will permit the teacher to plug in and listen to an individual student's work.

The Board recognizes that the equipment will be operated by personnel generally inexperienced in the operation of this type of apparatus. Therefore, all controls must display a design that conveys simplicity to the teacher-operator and operation by inexperienced personnel should not cause damage to the equipment.

The entire Language Laboratory system shall be guaranteed for a period of one full year after completion of installation. The installer shall conduct a thorough indoctrination of the teaching staff in the operation of the equipment. Clearly-written, illustrated instruction and service manuals shall be provided. Every three months for a full year after the initial installation, the contractor shall perform a complete maintenance check-out.

Teachers Master Console

The console shall provide (two) master tape play-

backs, (one) phonograph playback, and (one) master tape recorder/player each with separate volume controls and sound level meter with simplified scale. (For detailed specifications, see reference to tape recorders on page 11).

All tape decks shall be equipped with synchronous motors for reliability and constant speed to insure true reproduction.

All tape decks shall have idler wheels for take-up and feed spindle drives, rather than belts.

All tape decks shall be equipped with interlocked controls to prevent tape spillage and breakage. Switches and speed controls should withstand numerous and abrupt manipulations without damage.

The console tape recorder must be capable of recording each student position, his master, his response, or two-way conversation. Safety interlock of tape deck controls shall be provided so as to prevent accidental erasure of a tape. Means shall be provided so that this recorder may be used to make master tapes. This recorder shall also be usable as an additional master tape playback source.

(A manually operated record player equipped with a Cuemaster shall be mounted in a drawer or in the turret of the console. It shall have a 10" die cast aluminum turntable with cork pad and continuously variable speed motor from 16-84 rpm. For detailed specifications, see reference to record player on Page 11.)

Power to all student positions shall be controlled from a master switch in the console. All console communication amplifiers shall be provided with paralleled rectifiers to permit continued operation in spite of rectifier failure. A desk working area approximately 30" in height shall be provided on the console. Switches and tape playback units shall be mounted at an angle of approximately 70° for ease of working and maximum visibility. The overall dimensions of the console shall be 66" x 30" x 42" in height. Two storage drawers are also to be provided. The desk top of the console shall be of Formica or equal mar-proof material. All equipment in the console shall be flush mounted.

Selectors shall be provided to direct up to (eleven) master sources to any student or group of students in the Laboratory. The teacher shall, by movement of a single selector, be able at any time to listen to an individual student's master, his response, or his recording without passing through any other student's circuit. The teacher may converse with any student by turning off his individual master without affecting the master of the other students on the same master circuit. There shall be no undesired crosstalk on any circuit or function. The teacher may broadcast to a row of students, group of students listening to the same master, or the entire class.

The teacher may also broadcast to any student, group of students, or the entire class, the voice or recording of any student. The teacher may permit a conversation between any two students to be broadcast to the entire class, or any group of students. During such broadcast, the teacher's voice may be heard along with the voices of the two students, but other students shall not be heard. Masters shall be cut off during broadcasts.

Student Duplex Recorder

(Thirty) student stations shall have a dual-track tape recorder which will play a master lesson on the upper track and record the student response on the lower track simultaneously with maximum clarity and minimum background noise. Means shall be provided for the student to hear his voice directly from microphone to headphones when the tape is stopped, as well as during recording. Stop, Record and Play features shall be accomplished with one control.

Means shall be provided to turn off the upper track master when recording from or listening to console master lessons. Teacher communication with student shall be possible during Record, Play and Stop condition. It shall not be possible for the student to break tape, regardless of mishandling of controls. A resettable tape index counter shall indicate tape position. It shall not be possible for the student to erase the master tape.

The tape transport mechanism shall be provided with a synchronous motor designed for continuous use without overheating or necessity for frequent lubrication. Student shall be able to adjust his listen-loudness. The recording level shall be pre-set. The unit must be plug-in constructed and must have a clearly visible pilot light. (For detailed specifications, see reference to DUPLEX TAPE RECORDER; LP901, on page 12.)

Student Simplex Recorder

(Thirty-six) student stations shall have single track tape recorders capable of recording both the student's voice and a master lesson voice from the central console with maximum clarity and minimum background noise. Means shall be provided for the student to hear his voice directly from the microphone to headphones when the tape is stopped as well as during recording. Stop, Record and Play functions shall be accomplished with one control. Teacher communication shall be possible during Record, Play and Stop positions. It shall not be possible for the student to see or handle the magnetic tape or to break the tape through mishandling of controls. Means shall be provided to indicate, by flashing signal, "End of Tape" as it approaches end in Rewind, Fast Forward or Play/Record functions. If end of tape is reached without the student heeding the signal, the clutches and closed loops shall prevent tape from leaving reels. Signal remains on until tape direction is reversed.

The tape transport mechanism shall be provided with synchronous motor designed for continuous use without overheating or frequent lubrication.

The teacher shall have access to tape reels for changing of reels or making master recordings. A resettable tape index counter shall indicate tape position. There shall be no student controls other than Function and Rewind controls. All volume and recording controls shall be preset for best operation. (For detailed specifica-

tions, see reference to SIMPLEX TAPE RECORDER, LP902, page 12.)

Student Vocale Booth Specifications

(Thirty-five) student stations shall be equipped for audio-active Listen-Speak response. Students shall have microphones and headphones for instantaneous hear-back. All audio-active amplifiers shall be located in the console. There shall be no controls at the student position with the exception of volume adjustment. There shall be no requirement for power wiring of any nature at the student position. Connection between these booths and the console shall be by low impedance shielded cables to prevent crosstalk, hum, or frequency and signal loss.

Student Listening Booth Specifications

Student stations shall be equipped with headphones for student listening to master lessons. A connection box with volume control shall be provided at each student station. All of the equipment utilized must be readily convertible to an audio-active or recorder station without making obsolete or discarding any item.

Headphones

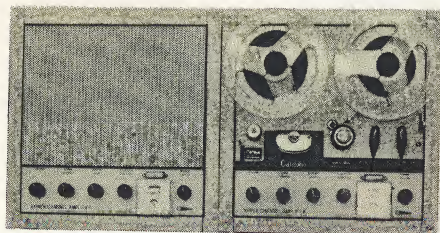
Headphones shall be low impedance and of the overhead magnetic or dynamic type having ear pieces covering the entire ear for rejection of extraneous noises. The ear pieces shall also be adjustable in 3 axes. (For detailed specifications, see reference to headphones on Page 12.)

Microphones

Microphones shall be low impedance and of high quality dynamic or controlled reluctance type, providing a high degree of noise reduction. The headphones and microphones for either the student or teacher may be of a combination type or separate pieces as specified. (For detailed specifications, see reference to microphones on Page 12.)

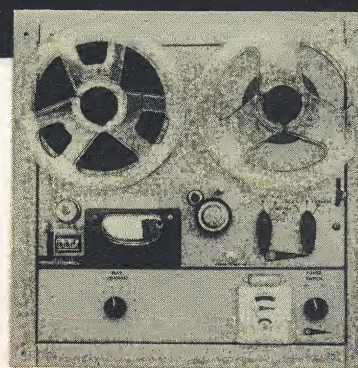
Booth Construction Specifications

The student booth shall be of heavy gauge sheet-metal construction. It shall be enclosed on the sides with perforated panels backed by fiberglass insulation for sound absorption. These panels shall extend from the level of the desk top to a height of approximately 49 inches from the floor, and from the front of the booth to a line approximately 8 inches beyond the rear of the desk area. It shall incorporate a desk top panel of Formica or equal mar-proof material and shall be set at an angle of 10° from horizontal for student comfort. The equipment shall be flush mounted at a height of approximately 29". Desk top dimensions shall be approximately 28" x 24". Legs shall be of tubular welded steel. A front panel shall be provided for additional sound absorption. However, its height shall be such to allow the student a full view of the front of the room. There shall be no exposed soft acoustical material, plexiglass or glass in the booth construction.



Console 2-Channel Recorder/Playback — LP 911

- Easily operated precision Tape Deck with two record/playback Amplifiers.
- Allows recording of two students simultaneously.
- May be used as Playback Deck for master recordings.
- May be used as Recorder for making instructional tapes.
- Has record safety button and adjustable erase head for one- or two-track erase.
- Dual record/play heads record separately or simultaneously on upper and lower tracks.
- Single control for record/play/stop functions. Rewind and fast-forward control interlocked with function control to prevent tape spillage or breakage. Controls cannot be misused.
- Has resettable Tape Index Counter for instantly locating desired part of recording.
- Rugged mechanism employs continuous duty SYNCHRONOUS MOTOR for accurate tape playback without warmup time and regardless of varying line voltage or hard usage.
- Up to 7" reels may be used at either 3¼ or 7½ IPS.
- Has extra large 2½" x 2½" easily readable, simplified VU Meter to show area of normal recording or playback level.
- All plug-in construction for easiest maintenance.
- Amplifier provided with cathode test points for simple routine maintenance checkouts.
- Has On-Off switch and long life neon pilot light.
- Operates on 110 volts, 60 cycles, AC current.
 - Input 90 watts
 - Frequency range 30 – 15,000 cycles
 - Signal to noise ratio 50 db.
 - Wow and flutter under 0.2% RMS
 - Harmonic distortion 1.0%
 - "Y" line standard voltage 1 volt RMS
- Dimensions: 29½" wide x 14½" high.
- Shipping weight: 42 pounds.



Console
Master Tape
Playback
— LP 921

- Easily operated precision Tape Deck with high quality playback Amplifier.
- Rugged mechanism employs continuous duty SYNCHRONOUS MOTOR for accurate tape playback without warmup time and regardless of varying line voltage.
- Designed for tape playback only. No accidental erasure of master tapes possible.
- Single control for play/stop functions. Rewind and fast-forward control interlocked with function control to prevent tape spillage or breakage. Controls cannot be misused.
- Has resettable Tape Index Counter for instantly locating desired part of recording.
- Has extra large 2½" x 2½" easily readable, simplified VU Meter to show area of normal playback level.
- Plays back at 3¼ or 7½ IPS using up to 7" reels.
- All plug-in construction for easiest maintenance.
- Amplifier provided with cathode test points for simple routine maintenance checkouts.
- Has On-Off switch and long life neon pilot light.
- Operates on 110 volts, 60 cycles, AC current.
 - Input 30 watts
 - Frequency range 30 – 15,000 cycles
 - Signal to noise ratio 50 db.
 - Wow and flutter under 0.2% RMS
 - Harmonic distortion 1.0%
 - "Y" line standard voltage 1 volt RMS
- Dimensions: 14½" wide x 14½" high.
- Shipping weight: 26 pounds.

Console Recorder/Playback — LP 910

- Identical with LP 911 except is a *single* channel Recorder/Playback only, recording on upper half of tape.
- Pictured as right half of LP 911 illustration.
- Operates on 110 volts, 60 cycles, AC current.
 - Input 50 watts
 - Frequency range 30 – 15,000 cycles
 - Signal to noise ratio 50 db.
 - Wow and flutter under 0.2% RMS
 - Harmonic distortion 1.0%
 - "Y" line standard voltage 1 volt RMS
- Dimensions: 14½" wide x 14½" high.
- Shipping weight: 26 pounds.



Console
Record Player
— LP 922-1

- Extremely heavy-duty, four-pole, continuously variable speed Turntable — 16 to 84 RPM.
- STROBESELECTOR with illuminated Stroboscope for exact setting of 16%, 33%, 45 and 78 RPM.
- Has 10" heavy machined aluminum Turntable with lifetime cork pad and built-in 45 RPM hub.
- Has rugged die cast deluxe Pickup Arm with G. E. variable reluctance cartridge.

- Has Cuemaster Automatic Arm Control to locate any desired part of record.
- Has floating deck to prevent groove jumping caused by floor vibration.
- Has high quality amplifier and extra large 2½" x 2½" easily readable, simplified VU Meter to show area of normal playback level.
- All plug-in construction for easiest maintenance.
- Amplifier provided with cathode test points for simple routine maintenance checkouts.
- Has On-Off switch and long life neon pilot light.
- Operates on 110 volts, 60 cycles, AC current.
 - Input 30 watts
 - Frequency range 30 – 15,000 cycles
 - Signal to noise ratio 45 db.
 - Wow and flutter 0.3% RMS
 - Harmonic distortion 1.0%
 - "Y" line standard voltage 1 volt RMS
- Dimensions: 16½" wide.
- Shipping weight: 31 pounds.

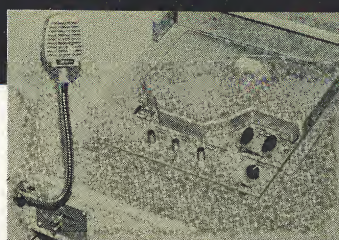


Rheem califone LANGUAGE LABORATORY EQUIPMENT SPECIFICATIONS



**The Duplex — LP 901
Student Recorder**

Easily operated precision Tape Deck with two-channel Amplifier.
Records simultaneously from Student microphone and either Console master or Student's own upper track master.
Student hears playback of master and then his own recording.
Erase head is on lower track only. Cannot erase masters recorded on upper track.
Optionally equipped to produce master recordings on upper track for mass duplicating applications.
Has pre-set recording level control.
Single control for record/play/stop functions. Rewind and fast-forward control interlocked with function control to prevent tape spillage or breakage controls. Cannot be misused.
Has Student operated "Console" or "Own Master" Selector Switch and Student listen-loudness control.
Has resettable Tape Index Counter for instantly locating desired part of recording.
Has record safety button to prevent accidental erasure.
Amplifies Microphone and remote line into Headphones for Audio-Active function, and provides continuous intercom from remote line regardless of function control setting.
Rugged mechanism employs continuous duty SYNCHRONOUS MOTOR for accurate tape playback without warmup time and regardless of varying line voltage or hard usage.
Plays up to 7" reels at 3 $\frac{3}{4}$ or 7 $\frac{1}{2}$ IPS.
Has extra large 2 $\frac{1}{2}$ " easily readable, simplified VU Meter to show area of normal recording level.
All plug-in construction for easiest maintenance.
Amplifier provided with cathode test points for simple routine maintenance checkouts.
Has On-Off switch and long life neon pilot light.
Operates on 110 volts, 60 cycles, AC current. Input 50 watts.
Frequency range 30 — 15,000 cycles.
Signal to noise ratio 50 db.
Wow and flutter under 0.2% RMS
Harmonic distortion 1.0%
"Y" line standard voltage 1 volt RMS
Dimensions: 14 $\frac{1}{16}$ " wide x 14 $\frac{1}{16}$ " high.
Shipping weight: 27 pounds.



**The Simplex* — LP 902
Student Recorder**

Easily operated precision Tape Deck with single channel Amplifier.
Records simultaneously from Student Microphone and Console master.
Student hears playback of master and then his own recording.
Tape reels and heads are fully enclosed. Student cannot handle tape or reels.
Light flashes words "END OF TAPE" several times as tape approaches either end. If disregarded, words stay illuminated at end of tape, and reels stop without allowing tape to come off of reels. May be left in this condition without harm to mechanism.
Has pre-set recording level control.
Single control for record/play/stop functions. Rewind and fast-forward control interlocked with function control to prevent tape spillage or breakage. Controls cannot be misused.
All controls are pre-set and sealed except controls for tape motion and power On-Off switch which face Student.
Has resettable Tape Index Counter for instantly locating desired part of recording.
Amplifies microphone and remote line into headphones for Audio-Active function, and provides continuous intercom from remote line regardless of function control setting.
Rugged mechanism employs continuous duty SYNCHRONOUS MOTOR for accurate tape playback without warmup time and regardless of varying line voltage or hard usage.
Concealed tape offers up to one-half hour of high-quality recording with maximum simplicity.
All plug-in construction for easiest maintenance.
Amplifier provided with cathode test points for simple routine maintenance checkouts.
Has On-Off switch and long life neon pilot light.
Operates on 110 volts, 60 cycles, AC current. Input 50 watts.
Frequency range 30 — 15,000 cycles
Signal to noise ratio 50 db.
Wow and flutter under 0.2% RMS
Harmonic distortion 1.0%
"Y" line standard voltage 1 volt RMS
Dimensions: 14 $\frac{1}{16}$ " wide x 14 $\frac{1}{16}$ " high.
Shipping weight: 28 pounds.
*Patent pending



**Headphone / Microphone
Combination — LX 799A**

Advanced design, lightweight Magnetic Headphone and Reluctance Microphone combination.
Oversized ear cups cover entire ear to keep out unwanted noises.
Has special unique mouthpiece to reject sounds other than user's own voice.
Headband size and microphone position both adjustable.

Both microphone and headphone elements impervious to heat, moisture or humidity, and may be used in any climatic condition.
Capable of withstanding more abuse by students than any other combination unit.
Has 4-foot vinyl covered cord.
Headphone impedance 2000 ohms.
Microphone impedance 250 ohms.
Headphone frequency response — 100 to 9,000 CPS
Microphone frequency response — 70 to 10,000 CPS
Shipping weight: 1 pound.

Headphone / Microphone Combination — LX 799-1A

Identical with LX 799A except has 8-foot cord.
Recommended for Teacher use due to greater length of cord.
Has foolproof double plug for easy insertion and removal by Teacher.

Headphone frequency response — 100 to 9,000 CPS
Microphone frequency response — 70 to 10,000 CPS



Microphone — LM 7-104-13

High quality reluctance microphone mounted to 13" flexible gooseneck with connecting cord concealed through the gooseneck.
Impedance — 250 ohms.
Frequency Response — 70 to 10,000 CPS

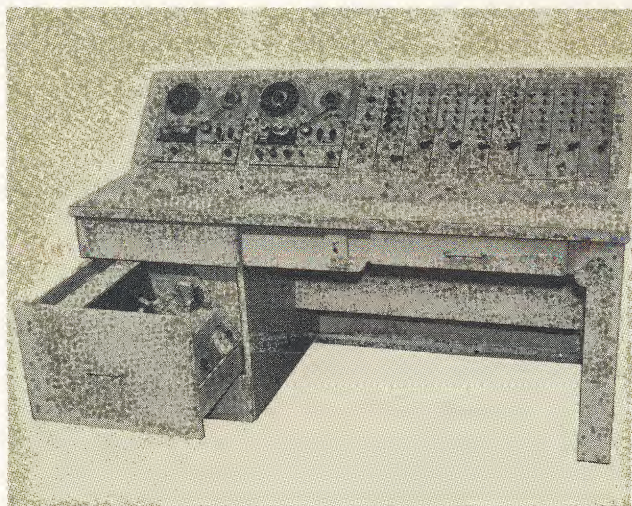


Headphone — HP 709-50

High quality, moderate price overhead type dual magnetic headphone.
Impedance — 2000 ohms.
Frequency Response — 90 to 10,000 CPS



califone LANGUAGE LABORATORY EQUIPMENT SPECIFICATIONS



Console Cabinet — LC 252

Compact, handsome one-piece Console provides space for entire Language Laboratory controls, amplification equipment, and master sources.

Modular design accommodates any combination of Switch Panels and Tape Decks. For example, will house four Tape Decks, one Phonograph and Switches for 45 Student positions. More switch positions may be obtained by reducing the number of program sources. Less equipment may be installed, and unused openings filled with baked enamel steel blank panels (LS 222 or LS 224).

Has two drawers which provide ample storage space for Tapes, Teacher's Headphone/Microphone, Books or other articles.

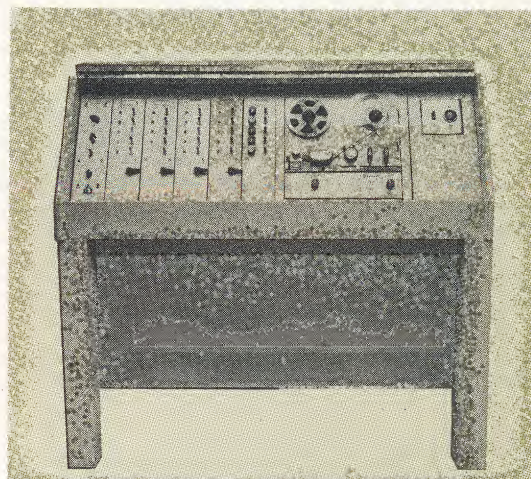
Constructed of hardwood Birch plywood, natural satin finish.

Desk surface 30 inches high, lifetime finished in warm-toned light grey Formica.

Easily removable ventilated back panel for convenient service and maintenance of equipment.

Size: 67" (L) x 30½" (D) x 42" (H)

Shipping weight: 195 pounds



Console Cabinet — LC 250

Cabinets are ruggedly constructed of ¾" Lebanite.

Full length piano hinge allows covers to fold and be locked for protection of equipment.

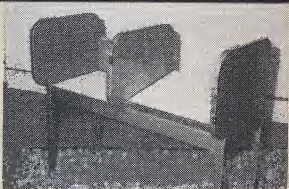
Designed to accommodate (a) any combination of three Tape units, or (b) one Tape unit and one Phonograph unit with LC 261 (storage area for tapes and accessories), or (c) up to twelve Switch Panels. Inside of unit accommodates up to four 10-station Distribution Amplifiers plus space for conduit and AC connecting boxes.

Dimensions: 45¼" (L) x 22¾" (D) x 16½" (H).

Consoles may be placed on tables or on optional Leg Assemblies (LC 240). 45° Wedge (LC 245) available if consoles are not set in straight line.

Low height of Console does not obstruct Teacher's view of class.

Cabinets provide adequate ventilation and easy access for maintenance of equipment.



**Student Booth
— LC 285**

Functional, durable, all-metal Student Booth, available with or without cutouts for Recorders.

Has Formica working surface, slanted for best visibility and comfort.

Surrounds Student with high efficiency sound absorbing panels of 2-inch thick fiberglas and perforated steel construction.

Extremely heavy gauge steel used throughout, formed to allow all AC wiring and audio cables to enter Booth module and terminate where needed without use of external conduit.

Assembled at the site with welded-in-place ⅝" bolts and fastened with elastic stop nuts.

Desk top area 28½" x 24".

Side Partition 30" front-to-back and 20" high.

Desk Surface 29" from floor level.

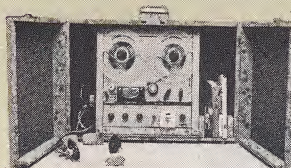
Available in two or three section assemblies for any number of Student stations in a row.

All surfaces baked enamel painted or electro-plated.

Shipping weight: 2-booth module, 125 pounds.

3-booth module, 190 pounds.

Convertible Top optional.



**Portable Booth
— LC 270**

A unique portable Carrying Case for DUPLEX or SIMPLEX Recorders.

Will hold either Recorder vertically with operating panel slightly inclined for easiest visibility.

Front doors open out to provide side panels of booth.

Door panels sound-deadened with durable polyurethane.

Case is covered in washable DuPont pyroxylin with metal corners and locks for tamper-proof storage.

Dimensions: 25" x 16" x 10".

Plug Box for Student Stations — LX 275

Mounts at front left corner of booth to provide plug-in for Teacher listening at Student position.

Has volume control for adjusting Student listen-loudness for hard-of-hearing Students.

Connects to Simplex or Duplex to provide receptacle for Student and Teacher microphone/headphone plugs.

Acts as booth outlet box for Vocale systems.



califone LANGUAGE LABORATORY EQUIPMENT SPECIFICATIONS

Switch Panel — LS 225



Offers total switching versatility for any type of laboratory teaching technique.
Has all features of LS 220-1.
In addition, allows any master source to be furnished to any Student position.
May also be used for group activities by turning individual master selector switches to "row" position. When all switches are in "row" position, master selector at bottom of panel takes over so that this panel now functions exactly as LS 220-1.
Provides for individual study Duplex Recorders on same switch panel as Simplex Recorders or Vocale Audio-Active system.
Each panel provides connectors to next adjacent panel, and plugs into Distribution Amplifier for easy installation.
Dimensions: 3 $\frac{3}{8}$ " wide x 14 $\frac{1}{16}$ " high.
Shipping weight: 4 pounds.

Teacher Panel — LS 219-1



Provides dual jack for Teacher's Headphone and Microphone.
Has separate Microphone Switch for momentary or continuous talk by Teacher.
Allows direct monitoring of master sources.
Allows Teacher to communicate with any group of Students listening to any program master regardless of physical location of Student in the classroom.
Has Headphone Outlet Jacks for two guests.
Has two Input Jacks for external master sources such as Sound Projectors or Radios.
Has "All-Call" switch.
Has volume control for Teacher's Headphone.
Dimensions: 3 $\frac{3}{8}$ " wide x 14 $\frac{1}{16}$ " high.
Shipping weight: 5 pounds.

Switch Panel — LS 220-1



Designed for those laboratory systems based on multiple of 5 station grouping.
Has Master Selector Switch with eleven positions, ten for master selection, and one for Teacher's "All-Call" to that particular row.
Has highest quality key switches for communication or recording of Student.
Any key set to right of center allows Teacher to record individual Student on Console Recorder.
Any Key set to left of center allows Teacher to monitor Student's activity. To speak to Student being monitored, Teacher presses button next to Student's key to mute individual master while allowing other Students to continue uninterrupted.
Each panel provides connectors to next adjacent panel, and plugs into Distribution Amplifier for easy installation.
Dimensions: 3 $\frac{3}{8}$ " wide x 14 $\frac{1}{16}$ " high.
Shipping weight: 4 pounds.

Distribution Amplifier — LA 211

Economy 10-Station Distribution Amplifier having all characteristics of LA 211-3 except designed for use where Recorders are installed in all booths and where LS 220-1 Switch Panels are used.
Cannot be used in Vocale type installations.
Cannot be used with LS 225 Switch Panels.
Frequency Range 30-20,000 Cycles—Harmonic Distortion 1.0%
"Y" line standard voltage 1 volt RMS
Shipping Weight: 16 pounds.

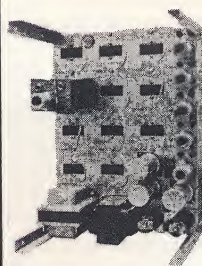
Plug-in Amplifier — LA 212

Amplifies one microphone into headphone.
Plugs into LA 211-3 Distribution Amplifier.
Required for each Audio-Active Student booth not having a Recorder.
Not required if Student booth has Tape Recorder.
One required in every lab installation for Teacher's Microphone.
Easily removed if Recorder later is installed in Student booth which was originally only Audio-Active.
Has low impedance input.
Amplifier provided with cathode test points for simple routine maintenance checkouts.
Input 2 $\frac{1}{2}$ watts. Frequency range 30—15,000 cycles.
Harmonic distortion 1 0%.
"Y" line standard voltage 1 volt RMS
Shipping weight: 2 pounds.

Public Address Amplifier — LA 206

High fidelity push-pull 10-watt Audio Amplifier.
Used to power auxiliary loudspeaker for broadcast of Teacher or master source to classroom.
Has volume control and separate tone controls for treble and bass.
Has cathode test points for simple routine maintenance checkouts.
Has On-Off switch and long life neon pilot light.
Operates on 110 volts, 60 cycles, AC current.
Input 60 watts Frequency range 50—15,000 cycles, \pm 2 db.
Dimensions: 14 $\frac{1}{16}$ " wide x 3 $\frac{3}{8}$ " high.
Shipping weight: 9 pounds.

10-Station Distribution Amplifier — LA 211-3



All-purpose Distribution Amplifier for use with either LS 225 or LS 220-1 Switch Panels.
Will service Student booths having either Simplex or Duplex Recorders or Audio-Active Vocale Headphones/Microphone.
Each outlet will accommodate LA 212 Amplifier if needed for Audio-Active system.
Operates on 110 volts, 60 cycle, AC current
Input 30 watts (without LA 212)
Frequency range 30—20,000 cycles
Harmonic distortion 1.0%
"Y" line standard voltage 1 volt RMS
Shipping weight: 20 pounds.

Other Language Laboratory Components

LC 240	Leg Assembly for LC 250 Console		
LC 240-1	9" wide shelf-type Writing Surface for use with LC 250 Console	LC 275-1	for Recorder
LC 245	45° wedge for connecting LC 250 Console Cabinets in convenient angled array		Side or End Partition, used with LC 275 or LC 275-2 booths
LC 261	Storage Shelf unit for use in LC 250 Console only	LC 275-2	Same as LC 275 without Recorder cutout
LS 218	Panel with cutout for AC power switch and pilot light. Width: 7 $\frac{1}{4}$ "	LC 280-2	Track for convertible booth top (LC 280-1) to be used on end partition
LS 218-1	AC Switch Panel, complete with master AC switch, pilot light and auxiliary AC switch. Width: 3 $\frac{3}{8}$ "	LC 280-3	Same as LC 280-2, except to be used on center partitions
LS 222	Blank Panel, 3 $\frac{3}{8}$ " wide	LM 7-104	Low impedance, reluctance Microphone with built-in desk stand. 250 ohms
LS 224	Blank Panel, 14 $\frac{1}{16}$ " wide	LX 713	Gooseneck with flange for microphone. 13" long
LC 260	Ventilated Equipment Box to enclose each LP 901 or LP 902	LX 276A	Guest Monitoring Jack Panel. Has four outlets, each with own volume control. Width: 3 $\frac{3}{8}$ "
LC 275	Wood booths with Sandalwood desk top	LX 277	Switch Assembly. Used to modify LP 901 when upper track recording desired
		LX 301	Vertical trim Angle. Width: 1"

LEADERSHIP...NOT COMPETITION IS THE RHEEM CALIFONE POLICY

For over 20 years, Rheem Califone's Leadership in School and Professional Audio Equipment has set the Standard of Quality in Portable Phonographs, Transcription Players and complete Sound Systems.

QUALITY • Rheem Califone maintains complete Quality Control over all Rheem Califone Language Laboratory parts. Recording, playback and amplification components are designed and built in our plants. Each bears the identifying Rheem Califone seal — your symbol of topmost quality.

COMPATABILITY • Components are matched so that units may easily be added without discarding previously installed equipment.

DURABILITY • *All components are guaranteed for one year.* Cabinets and booths are of proven sturdy design. Only long-life heavy-duty synchronous motors are used in Rheem Califone tape recorders.

SERVICEABILITY • All electronic equipment is provided with plug-in connectors permitting quick removal for servicing and easy reinstallation. Convenient check points enable testing every circuit of entire system without removing tubes or equipment from enclosures. A single wire at low impedance carries teacher-student communication, console masters and student recording at the console. Service problems are reduced. Complicated multiple wiring installation is eliminated.

OPERATIONAL SIMPLICITY • Controls on tape recorders, phonographs and teacher consoles are reduced to a minimum eliminating possible "Gadget Confusion" and student tampering.

HIGH FIDELITY • Rheem Califone equipment provides the highest standard of sound reproduction — especially essential in languages where intonation and inflection determine the exact meaning of words.

THE RHEEM CALIFONE PRICE includes Rheem Califone Service. All installation and service of Rheem Califone Language Laboratory Equipment is performed by franchised **RHEEM CALIFONE DEALERS** — selected and trained for experience and competence in installing and servicing this type of equipment.

Plan your Rheem Califone Language Laboratory with your Rheem Califone Dealer. He is prepared to:

- 1) Aid you in planning the type of installation you require.
- 2) Facilitate prompt installation and testing of each major component after the equipment is delivered.
- 3) Instruct the teaching staff in the efficient operation of your equipment.
- 4) Perform a complete *Systems Test* and obtain a Certificate of Acceptance.
- 5) Perform Preventive Maintenance Calls within 30 days, and again at 90 days, 180 days and 270 days after original installation.
- 6) Perform prompt emergency service at your request.



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